

STATEMENT OF ALEXANDER P. BUTTERFIELD, ADMINISTRATOR,  
FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF  
TRANSPORTATION, BEFORE THE SENATE COMMERCE COMMITTEE,  
SUBCOMMITTEE ON AVIATION, MAY 16, 1974, REGARDING CONTROL  
OF AIRCRAFT NOISE

Mr. Chairman and Committee Members:

First, I would like to introduce the people at this table with me.

Mr. Frederick A. Meister, FAA's Acting Associate Administrator  
for Plans and Mr. Richard P. Skully, Director of FAA's Office of  
Environmental Quality.

We are pleased to be here today to report on and discuss with you  
progress being made to improve the aviation community's environmental  
posture, particularly with respect to noise. Aircraft noise has brought  
on increased pressure to limit flight operations and restrict flight paths  
as well as to impose night curfews. Airport operators have been faced  
with aircraft noise related suits involving potential multimillion dollar  
judgments.

As you know, the Federal Aviation Administration has been mindful  
for many years of the constraints imposed on the air transportation system  
by adverse environmental impact. Having been given increased statutory

authority in recent years, FAA has developed and is implementing an aggressive program to control aircraft noise. We believe that program is paying off. Today I would like to review with you both the program and the payoffs.

The FAA's plans, programs, and accomplishments have followed a consistent and orderly process. In November 1969 we published Federal Aviation Regulation Part 36, which put a lid on the escalation of aircraft noise. Examples of significantly quieter aircraft certificated under this regulation are the DC-10, L-1011, B-747, F-28, Cessna Citation and the Dassault Falcon 10. Over 400 commercial aircraft now in operation have been type certificated to FAR 36 levels. Additionally, some 200 non-commercial jet powered aircraft type certificated to FAR 36 levels are operating today. The FAA has accomplished over 100 certification actions under FAR 36 which have insured that modifications to existing aircraft were accomplished without increasing the aircraft's noise levels.

Having put a lid on the escalation of aircraft noise, the FAA next addressed the issue of noise levels of aircraft coming off production

lines under certificates issued before FAR 36 became effective. A Notice of Proposed Rule Making was issued dealing with this subject in July 1972, and a final rule was published in October 1973. That rule requires compliance with the FAR 36 noise levels as a condition for the issuance of a standard airworthiness certificate. As a result all newly produced large turbojet aircraft have had to meet FAR 36 noise levels.

We are currently addressing the quieting of in-service commercial aircraft through the development of fleet noise requirements. This is the so-called retrofit program which I will discuss in detail later on in my testimony.

Dealing further with aircraft source noise the FAA issued a Notice of Proposed Rule Making in October 1973 which proposed noise standards for propeller-driven aircraft. This proposal would accomplish objectives essentially parallel to those of FAR 36 for turbojet aircraft. First a lid will be put on propeller-driven aircraft noise. Next, all newly produced propeller-driven aircraft will be required to meet that noise standard. An Environmental Impact Statement has been prepared

for the final rule, and we are hopeful that the rule will be in effect this year.

With regard to supersonic civil aircraft noise, rulemaking action dated April 1973 prohibits all supersonic flights over the U. S. by civil aircraft. The FAA is closely monitoring the development of the Concorde. As you know the Concorde is not yet being operated by air carriers; it is still under development. Recent press reports have indicated further design changes are being considered. Consequently, we are not yet in a position to promulgate standards for this aircraft under Section 7 (b) of the Noise Control Act amending Section 611 (d) of the Federal Aviation Act, which requires consideration of factors such as air safety, economic reasonableness, practicable technology and the appropriateness of any such standard in relation to the type of aircraft.

We are also looking at future aircraft types and future noise level requirements. In December 1973 the FAA issued an Advance Notice of Proposed Rule Making seeking comment related to noise standards for

shorthaul aircraft. This Advance Notice covers aircraft capable of taking off and landing vertically or having short takeoff and landing capabilities. The shorthaul air transport concept has been studied for many years, and since this aircraft type involves city center as well as suburban operation, we plan to establish noise standards for these aircraft to insure environmental acceptability of shorthaul facilities by the communities served.

The development of future noise level requirements for all commercial aircraft is in advanced stages at the FAA staff level. Our four plus years of experience in the implementation of FAR 36 has highlighted many areas for regulatory modification which can provide further noise relief. FAA's desire to revise present noise level standards downward was made clear to the aircraft industry in August 1972 in a letter to representative industry officials. Based on our regulatory experience and the extensive governmental noise reduction research and development effort, it is believed that we can issue a notice presenting the new, more stringent regulatory requirements for comment by the end of 1974.

The FAA views the control of aircraft noise through the use of operational procedures to be a promising and practical means toward obtaining early noise relief. We have for many years been experimenting with different takeoff and approach procedures, passive and dynamic preferential runway procedures, noise abatement routing, and terminal area handling of aircraft to achieve noise control.

Noise abatement takeoff operating procedures designed to provide maximum separation between aircraft and the communities overflowed were developed jointly by FAA and ATA. On August 1, 1972, a procedure which defined climb speed and altitudes for configurational and power changes was introduced. The procedure was modified in late 1973 and published as a recommended noise abatement takeoff and departure procedure for civil turbojet aircraft in FAA Advisory Circular 91-39, dated January 18, 1974.

We are currently developing additional procedures along these same lines.

Noise abatement approach operating procedures developed jointly by FAA and NASA include a two-segment glide slope which provides noise reduction by use of lower power settings. A few airlines have been using two-segment approaches safely and efficiently for over one year during VFR weather conditions. The joint NASA/FAA research on two-segment approaches has reached the point where in-service operational implementation is progressing under instrument flight rule (IFR) conditions as well. In fact, last month a major airline started operational trials with a DC-8 aircraft under VFR and IFR weather conditions, which included two-segment approaches to three U. S. and one Canadian airports. The FAA has recently issued an Advance Notice of Proposed Rule Making seeking advice and comments on this two-segment approach procedure. In connection with this Advance Notice the FAA has identified approximately sixty candidate airports for installation of on-ground guidance equipment to enable aircraft to use the two-segment approach. We hope to fund this equipment through the Aviation Trust Fund as part of our Facilities and Equipment Program.

Another aspect of maximizing aircraft to ground separation distances to provide community noise relief is to change allowable minimum altitudes. Historically FAA viewed this issue as one of safety, but utilization of higher minimum altitudes as a means of achieving noise relief as well as safety has now been recognized. After extensive study the FAA issued in early 1972 agency Order 7110.22 and Advisory Circular 90-59 dealing with arrival and departure handling of high performance aircraft. The objective of these directives was to keep aircraft as high as possible at all times in the terminal control area. This program has been referred to as the "Keep-'Em High" program and has been effective on a nationwide basis in providing significant noise relief. A later but related Advisory Circular, 91-36, was published in August 1972 to deal directly with VFR flight near noise sensitive areas. The purpose of this advisory was to encourage pilots making VFR flights near recreational and park areas, churches, hospitals, schools, and similar areas to fly at altitudes higher than the minimum permitted by regulation in order to reduce aircraft noise impact on the ground.



**The FAA's regulatory plans and programs could not be accomplished without a substantial technical data base. To date the government has spent in excess of \$200 million on research and development in the aircraft noise abatement area. For example since the issuance of FAR 36 the FAA/DOT has spent approximately \$34 million and NASA \$150 million. The FAA's program and plans encompass the following areas of research and development:**

- 1. Source noise prediction and reduction**
- 2. Core engine noise control**
- 3. Configurational effects on noise**
- 4. General aviation aircraft noise**
- 5. Retrofit feasibility for commercial and executive jet aircraft**
- 6. V/STOL jet and rotary propulsor noise control**
- 7. Operational noise control**
- 8. Noise measurement systems**
- 9. Noise exposure evaluation and community response**
- 10. Noise certification criteria**

## 11. Sonic boom reduction and control

I would like to turn now to what we consider to be the cornerstone of our noise control program, the retrofitting of the current commercial jet fleet to meet FAR 36 standards.

The technical development of means for quieting the present fleet has been underway for more than six years, and this joint industry-government effort has resulted in the expenditure of well in excess of \$100 million. Formal steps taken in this development program were as follows: first, an early NASA program provided proof of the technical concept of using sound-absorbing materials, which I shall refer to as SAM, to control aircraft noise; second, feasibility studies established that airline configurations capable of being certificated for airworthiness could be engineered and produced; and, finally, a decision was made that we were ready to initiate formal regulatory action.

On March 27, 1974 a Notice of Proposed Rule Making was published which, if adopted would provide a means of assuring that all currently available acoustic technology is applied to in-service commercial aircraft. Behind this proposed rule is our conviction that the technology of utilizing sound absorbing material in engine nacelles is available for providing additional, significant relief from aircraft noise now.

We are advocating adoption of the SAM retrofit for the following reasons:

1. It provides noticeable noise relief now;
2. Its adoption would enable FAA to meet its statutory responsibilities;
3. Unreasonable postponement of the final rule would adversely affect the air transportation system;
4. Its adoption would help save the United States' position of international leadership in aviation;
5. There is at present no viable option to the SAM retrofit program.

Regarding the first point of providing noticeable relief now, the feasibility of quieting turbojet aircraft was demonstrated by FAA for the Congress and the public by flyover noise comparisons at Dulles International Airport in May 1973. That project, jointly conducted by FAA and the Boeing Company, demonstrated that takeoff noise reductions of 11 EPNdB and approach noise reductions of 15 EPNdB were achievable using nacelles quieted with sound absorbing material on a Boeing 707. Mr. Chairman, significant noise relief parallel to that of the Dulles airport flyover noise comparisons is technologically available today to literally hundreds of thousands of persons located near our busier airports.

Second, as Administrator, I am charged with the statutory responsibility in Title 49 United States Code Section 1431(a) to prescribe regulations as I may find necessary to provide for the control and abatement of aircraft noise "[I]n order to afford present and future relief and protection to the public from unnecessary aircraft noise." By requiring retrofit using available SAM technology I believe I will

be discharging that mandate of the Congress to afford presently available relief.

Third, postponing the implementation of a program holding great promise for significant relief will only serve to further alienate those suffering the greatest noise impact. This alienation could logically lead to a proliferation of lawsuits and increased pleas for unreasonable flight operations restrictions and curfews. Now that we are on the threshold of affording significant relief, deferring action now for the promise of a future solution will be difficult to justify. One comment received on the proposed rule eloquently makes the point: "Now that the means of relieving suffering is available it would be inhumane not to place it (the rule) in service without delay."

Fourth, the United States must continue to assert its leadership role in aviation technology and not run the risk of seeing this leadership eroded. Several countries, working through a strong ICAO program are making aggressive efforts to curb the noise problem. For example the Government of Japan has ordered the retrofit of 18 B-727,

6 B-737 and 7 B-747 aircraft at a cost of \$5.5 million. That ordered retrofit will use the SAM acoustical nacelle treatment. The United States is the leading manufacturer of commercial aircraft. As a consequence of this leadership, the United States should take the lead in the environmental modification of those aircraft. Failure to stimulate international participation in an aircraft quieting program would tend to have an offsetting effect in acoustic improvement at U. S. international airports. Incidentally, we contemplate a program to require foreign air carriers operating into the United States to modify their aircraft to achieve FAR noise levels.

The fifth and last point I would like to make with respect to our desire to proceed with the SAM retrofit program is that there is no present acceptable alternative. We have closely monitored the other major effort, the so-called refan project, being conducted by NASA. We believe that program offers potential for future design aircraft, but question its use as a retrofit program. Refan is more than an engine replacement program -- it will probably involve aircraft design changes

as well. Additionally we believe refan will not be available for another four years, whereas, as I stated previously, SAM retrofit is available today.

So, those are the five major points I am stressing today relative to moving ahead with the SAM retrofit program.

While we are advocating the SAM retrofit program, Mr. Chairman, we recognize that the program will not be accomplished without difficult issues having to be faced. For example, the program will be costly. It has been estimated that the total cost to retrofit the present fleet will range from \$600 million to \$800 million. The FAA has been considering alternative methods of financing the noise retrofit program. The Notice of Proposed Rule Making regarding retrofit specifically solicited comments and suggestions from the public and industry concerning means of financing the effort. We are postponing decision making on a recommended course of action until all comments are received and thoroughly considered.

Mr. Chairman, that concludes my prepared statement. We in the FAA look with pride to our accomplishments in the area of noise control.

We do not consider our actions to date to represent a final answer to noise problems, but we strongly believe our efforts have been considerable and have resulted in substantial progress in affording noise relief. The SAM retrofit program is necessary to continue this progress and to give us a measurable amount of relief now instead of promises for future relief.

Thank you for your attention, and I and my associates will be happy to answer the questions you may have.